

# Chemical Economy & Engineering Review

January 1975—December 1975

## January/February 1975 Vol. 7 No. 1, 2 (No. 81)

Chemical Technology and Chemical Industry	
by Ryoichi Wakasa . . .	9
Tasks for Clean Energy and Sunshine Projects	
by Shoroku Kato . . .	15
Trends in Diaphragm Chlorine Caustic Process for Environmental Control and Energy Saving	
by Kazuo Shirasaki . . .	32
Today's Perfumery Industry in Japan	
by T. Moroe and T. Yoshida . . .	36
Prospects for Polyurethane in Japan	
by Keiji Iwata . . .	42
Industrial Development and Oil Pollution Preventing Technology	
by Toshiaki Akabane . . .	47
News Scope	
Development in International Uranium Enrichment Plans . . . . .	55
Fundamentals and Applications of Mini-computers . . . . .	56
Business World	
Nuclear Energy . . . 56 / Ocean Development & Petroleum . . . 57 / Chemical Industries . . . 57 / Plant Engineering . . . 58 / Steel & Other Metals . . . 58	
Marketing Information: Synthetic Perfumes Exporting from Japan . . . . .	41
Index to Advertisers . . . . .	54

## March 1975 Vol. 7 No. 3 (No. 82)

Oil Problem in Critical Stage	
by Tomeaki Oi . . .	7
Nitrogenous Fertilizer and Raw Material Problems	
by Masanao Esaki . . .	12
Tasks for Technical Development in Polymer Industry—Present Inequities and Their Solutions—	
by Yasuharu Saeki . . .	31
High-Density Polyethylene (HDPE) Process—How It Has Changed and Its Prospects	
by Kiyoshi Nishitani . . .	37
490 kW Fluorocarbon Turbine Generator	
by Koji Segi . . .	42
Application of Ethyl Diphenyl as Heat Transfer Medium and Recent Heat Transfer Medium Technology	
by Hideki Umehara . . .	50
News Scope	
Petroleum Industry Capital Spending Hits New High in 1973 . . . . .	60
Production of Olefines from Heavy Fractions . . .	60
Business World	
Nuclear Energy . . . 62 / Ocean Development & Petroleum . . . 62 / Chemical Industries . . . 65 /	

50

Plant Engineering . . . 66 / Steel & Other Metals . . . 66	
Index to Advertisers . . . . .	64

## April 1975 Vol. 7 No. 4 (No. 83)

Research and Development in Chemical Industry in the 1990s—Prospects for Progress	
by Hiroshi Terada . . .	9
Food Problems and Amino Acid Industry	
by Hirotochi Samejima . . .	17
Synthetic Fatty Acids	
by Masayasu Takao . . .	25
Development of Catalytic Hydration Process for Acrylamide Production	
by E. Otsuka and T. Takahashi . . .	29
Polyvinyl Alcohol Degradation Techniques Using Microorganisms	
by H. Nishikawa and Y. Fujita . . .	33
Characteristics of Aluminized Steel and its Uses in Japan	
by Kuniyasu Uehara . . .	42
News Scope	
Outlet Sought for Powder Coating . . . . .	51
U.S. Petrochemical Industry to Invest More Despite NG Shortage . . . . .	55
Business World	
Nuclear Energy . . . 56 / Ocean Development & Petroleum . . . 56 / Chemical Industries . . . 56 / Plant Engineering . . . 57 / Steel & Other Metals . . . 58	
Index to Advertisers . . . . .	54

## May 1975 Vol. 7 No. 5 (No. 84)

Future of World Economy and Management of Petrochemical Industry	
by Fukashi Hori . . .	9
Role of Catalysts in Chemical Industry—Their Past and Future	
by Mitsuo Yamaguchi . . .	15
New Nissan Process for Concentrated Phosphoric Acid and Current Trends in Phosphoric Acid Manufacture	
by Mitsuya Miyamoto . . .	20
Manufacture and Characteristics of Synthetic Micaceous Iron Oxide (MIO)	
by Mitsunao Takahashi . . .	28
Heavy Metal Treatment by Ferritization	
by Saburo Hayashi . . .	32
Refuse Compaction System ("TEKKASEKI" System)	
by Masatsugu Nagano . . .	38
News Scope	
World Petroleum Congress . . . . .	44

Chemical Economy & Engineering Review

# Chemical Economy & Engineering Review

January 1975—December 1975

January/February 1975 Vol. 7 No. 1, 2 (No. 81)

Chemical Technology and Chemical Industry	
by Ryoichi Wakasa . . .	9
Tasks for Clean Energy and Sunshine Projects	
by Shoroku Kato . . .	15
Trends in Diaphragm Chlorine Caustic Process for Environmental Control and Energy Saving	
by Kazuo Shirasaki . . .	32
Today's Perfumery Industry in Japan	
by T. Moroe and T. Yoshida . . .	36
Prospects for Polyurethane in Japan	
by Keiji Iwata . . .	42
Industrial Development and Oil Pollution Preventing Technology	
by Toshiaki Akabane . . .	47
News Scope	
Development in International Uranium Enrichment Plans . . . . .	55
Fundamentals and Applications of Mini-computers . . . . .	56
Business World	
Nuclear Energy . . . 56 / Ocean Development & Petroleum . . . 57 / Chemical Industries . . . 57 / Plant Engineering . . . 58 / Steel & Other Metals . . . 58	
Marketing Information: Synthetic Perfumes Exporting from Japan . . . . .	41
Index to Advertisers . . . . .	54

March 1975 Vol. 7 No. 3 (No. 82)

Oil Problem in Critical Stage	
by Tomeaki Oi . . .	7
Nitrogenous Fertilizer and Raw Material Problems	
by Masanao Esaki . . .	12
Tasks for Technical Development in Polymer Industry—Present Inequities and Their Solutions—	
by Yasuharu Saeki . . .	31
High-Density Polyethylene (HDPE) Process—How It Has Changed and Its Prospects	
by Kiyoshi Nishitani . . .	37
490 kW Fluorocarbon Turbine Generator	
by Koji Segi . . .	42
Application of Ethyl Diphenyl as Heat Transfer Medium and Recent Heat Transfer Medium Technology	
by Hideki Umehara . . .	50
News Scope	
Petroleum Industry Capital Spending Hits New High in 1973 . . . . .	60
Production of Olefines from Heavy Fractions . . .	60
Business World	
Nuclear Energy . . . 62 / Ocean Development & Petroleum . . . 62 / Chemical Industries . . . 65 /	

50

Plant Engineering . . . 66 / Steel & Other Metals . . . 66	
Index to Advertisers . . . . .	64

April 1975 Vol. 7 No. 4 (No. 83)

Research and Development in Chemical Industry in the 1990s—Prospects for Progress	
by Hiroshi Terada . . .	9
Food Problems and Amino Acid Industry	
by Hirotochi Samejima . . .	17
Synthetic Fatty Acids	
by Masayasu Takao . . .	25
Development of Catalytic Hydration Process for Acrylamide Production	
by E. Otsuka and T. Takahashi . . .	29
Polyvinyl Alcohol Degradation Techniques Using Microorganisms	
by H. Nishikawa and Y. Fujita . . .	33
Characteristics of Aluminized Steel and its Uses in Japan	
by Kuniyasu Uehara . . .	42
News Scope	
Outlet Sought for Powder Coating . . . . .	51
U.S. Petrochemical Industry to Invest More Despite NG Shortage . . . . .	55
Business World	
Nuclear Energy . . . 56 / Ocean Development & Petroleum . . . 56 / Chemical Industries . . . 56 / Plant Engineering . . . 57 / Steel & Other Metals . . . 58	
Index to Advertisers . . . . .	54

May 1975 Vol. 7 No. 5 (No. 84)

Future of World Economy and Management of Petrochemical Industry	
by Fukashi Hori . . .	9
Role of Catalysts in Chemical Industry—Their Past and Future	
by Mitsuo Yamaguchi . . .	15
New Nissan Process for Concentrated Phosphoric Acid and Current Trends in Phosphoric Acid Manufacture	
by Mitsuya Miyamoto . . .	20
Manufacture and Characteristics of Synthetic Micaceous Iron Oxide (MIO)	
by Mitsunao Takahashi . . .	28
Heavy Metal Treatment by Ferritization	
by Saburo Hayashi . . .	32
Refuse Compaction System ("TEKKASEKI" System)	
by Masatsugu Nagano . . .	38
News Scope	
World Petroleum Congress . . . . .	44

Chemical Economy & Engineering Review

<b>New Product</b>	
New Type of Water-soluble Urethane Resin . . . . .	44
<b>Business World</b>	
Nuclear Energy . . . 47 / Ocean Development & Petroleum . . . 47 / Chemical Industries . . . 48 / Plant Engineering . . . 48 / Steel & Other Metals . . . 49	
<b>Index to Advertisers</b> . . . . .	46

### June 1975 Vol. 7 No. 6 (No. 85)

<b>Solar-Hydrogen Energy System: How Will It be Founded?</b>	
by Tokio Ohta . . .	7
<b>Hydrogen Energy and Rare Earth</b>	
by I. T. Ojima . . .	13
<b>Petrochemical Technology Expected to be Developed</b>	
by Yoshihiko Hirakawa . . .	18
<b>Recent Trends in Technology for High-density Polyethylene</b>	
by Akira Takeda . . .	24
<b>Properties and Expected Applications of Ultrafine Metal Powders</b>	
by Azusa Hori . . .	28
<b>Novel Route to Synthesis of Alkylpyridines</b>	
by Nobuyoshi Takahashi . . .	34
<b>Alfin Rubber with Improved Quality</b>	
by M. Oda and N. Yokoyama . . .	36
<b>News Scope</b>	
Invitation toACHEMA 1976 . . . . .	41
New Production Technology for Extralarge Graphite Products . . . . .	41
Uranium from Phosphate Rock . . . . .	42
License Offered for Ion Exchange Membrane Process . . . . .	42
Hydrogen for Chemical Use . . . . .	42
International Contracts for Linde Air Separation Plants . . . . .	43
<b>New Plants</b>	
60,000 t/a HD Polyethylene Facility . . . . .	33
Flue-gas Desulfurization Plant for Coal-burning Boiler . . . . .	33
<b>New Product</b>	
Jack-up Type Offshore Oil Drilling Rig . . . . .	43
<b>Business World</b>	
Nuclear Energy . . . 44 / Ocean Development & Petroleum . . . 44 / Chemical Industries . . . 45 / Plant Engineering . . . 46 / Steel & Other Metals . . . 49	
<b>Index to Advertisers</b> . . . . .	48

### July 1975 Vol. 7 No. 7 (No. 86)

<b>A New Look at Coal</b>	
by Tamechika Yamamoto . . .	7
<b>High-Temperature Steam Cracking of Vacuum Residue—A Link Between Steel Industry and Petroleum Refining</b>	
by Kanichiro Obata . . .	12
<b>Development of Terephthalic Acid Type Unsaturated Polyester Resin</b>	
by Hiroshi Suzuki . . .	18
<b>Levulinic Acid, A New Chemical Raw Material—Its Chemistry and Use—</b>	
by M. Kitano, F. Tanimoto and M. Okabayashi . . .	25
<b>Techniques for Regeneration of Polystyrene Foam Scrap</b>	
by Unzo Sato . . .	30

### December 1975 Vol. 7 No. 12 (No. 91)

<b>News Scope</b>	
Interim Report on Long-Term Energy Plan . . .	35
Fuel Cell in Final Development Stage . . . . .	36
Coal Liquefaction Project . . . . .	36
New Fire Resistant Product for Offshore Oil Industry . . . . .	37
New Research Tool for Nuclear Power Plant Fuel . . . . .	37
Air Separation Unit from India . . . . .	38
<b>Business World</b>	
Nuclear Energy . . . 38 / Ocean Development & Petroleum . . . 38 / Chemical Industries . . . 38 / Plant Engineering . . . 41 / Steel & Other Metals . . . 42	
<b>Index to Advertisers</b> . . . . .	40

### August 1975 Vol. 7 No. 8 (No. 87)

<b>Primary Energy Substitution Model on the Interaction between Energy and Society</b>	
by Dr. C. Marchetti . . .	9
<b>(Appendix)</b>	
Methods of Calculation . . . by N. Nakicenovic . . .	15
<b>The USSR Economy and "Chemicalization"</b>	
by Kazuo Ogawa . . .	20
<b>Trends in Exports/Imports of Chemicals in Fiscal 1974</b>	
by Fukutaro Magari . . .	23
<b>Chemical Utilization of Carbon Dioxide</b>	
by Shohei Inoue . . .	31
<b>New Method of L-Lysine Manufacture</b>	
by Yoshikazu Ito . . .	36
<b>Direct Electric Heating System</b>	
by Sadao Iwanami . . .	40
<b>News Scope</b>	
Test Plant for Solar Energy Power Plant . . . . .	45
Floating Power Plant after 1982 . . . . .	45
Ammonia Plants to Russia . . . . .	45
Dow Applies for Soda Production . . . . .	46
Development of Spongy Metal . . . . .	46
Fluorine Rubber for Trial Sales . . . . .	47
MISC and Panocean Announce Formation of New Joint Company . . . . .	47
First Petrochemical Order for Linde AG from the People's Republic of China . . . . .	47
Oil Rigging Ship to U.S. . . . .	47
Pigment Color Matching by Computer . . . . .	48
<b>New Plant</b>	
Waste Water Disposal System Using Activated Carbon . . . . .	51
<b>Business World</b>	
Nuclear Energy . . . 51 / Ocean Development & Petroleum . . . 52 / Chemical Industries . . . 53 / Plant Engineering . . . 54 / Steel & Other Metals . . . 55	
<b>Index to Advertisers</b> . . . . .	50

### September 1975 Vol. 7 No. 9 (No. 88)

<b>Demetalization of Heavy Residual Oil by Cracking—in Relation to Metal Smelting—</b>	
by Shinichi Ishigaki . . .	7
<b>Development of a 100,000m<sup>3</sup>/day Desalting Plant</b>	
by Dr. Seiichi Ishizaka . . .	14
<b>Outlook on Ion Exchange Electrolytic Process</b>	
by Hiromichi Seya and Joichi Nakata . . .	23
<b>Comprehensive Computer System in Chemical Plant Production</b>	
by Eijiro Okumura . . .	27

<b>New Pollution-free Techniques for Pulp Manufacture</b> by A. Mita, T. Akabane and T. Yamamoto . . .	36
<b>News Scope</b>	
Long-term Forecast of World Energy . . . . .	44
Direct Production of Iron With High- temperature Reducing Gas . . . . .	45
Capital and Exploration Cut Back . . . . .	46
Joint Conference on Desalination . . . . .	49
Three Large-scale Desalination Plants Completed in Hong Kong . . . . .	49
Loans for USSR Projects . . . . .	50
Desalter Ordered for Nuclear Power Plant . . . . .	50
<b>Business World</b>	
Nuclear Energy . . . 50 / Ocean Development & Petroleum . . . 51 / Chemical Industries . . . 51 / Plant Engineering . . . 52 / Steel & Other Metals . . . 52	
<b>Index to Advertisers</b> . . . . .	48

### October 1975 Vol. 7 No. 10 (No. 89)

<b>World Petrochemical Industry—Its Present State and Future Prospects—</b> by Dr. Kiyoshige Hayashi . . .	9
<b>Solvent Refined Coal Industry in Japan—Past and Present—</b> by Dr. Arimasa Baba . . .	15
<b>Development of Electrolytic Hydrodimerization of Acrylonitrile</b> by Maomi Seko . . .	20
<b>Technical Trends in DOP Process</b> by Reikichi Nozawa . . .	26
<b>Manufacturing Process for Polypropylene</b> by Mitsuo Oku . . .	31
<b>Liquefied Petroleum Gas Situation and LPG Tankers in Japan</b> by Shigeru Yoshida . . .	37
<b>News Scope</b>	
Propylene Butadiene Rubber . . . . .	44
LPG Production in Dubai . . . . .	44
Introduction of Technology Assessment . . . . .	44
Manufacturing Technique for Sintered Alumi- num Parts . . . . .	47
Low-temperature Catalyst for Dry-type Flue-gas Denitrification . . . . .	48
<b>New Plant</b>	
No. 2 Isoprene Plant Based on GPI Process . . .	36
Crude Oil Atmospheric Distillation Unit . . . . .	43
<b>Business World</b>	
Nuclear Energy . . . 48 / Ocean Development & Petroleum . . . 48 / Chemical Industries . . . 49 / Plant Engineering . . . 49 / Steel & Other Metals . . . 50	
<b>Index to Advertisers</b> . . . . .	46

### November 1975 Vol. 7 No. 11 (No. 90)

<b>International Supply and Demand for Natural Gas</b> by Ryoza Hiwada . . .	7
<b>Economic Conditions in Eastern Europe and Energy Problem</b> by Kazuo Ogawa . . .	12
<b>Engineering Industry Aims at Internationalization</b> by Hiroshi Kuwahara . . .	19
<b>Development of New Engineering Plastics U Polymer</b> by Hiroshi Sakata . . .	24

<b>MIC Heating/Heat-Insulation System for Fluids</b> by M. Otsuka, M. Ueda and N. Mashimo . . .	29
<b>Continuous Waste Organic Gas Treatment Process</b> by Tetsuya Komo . . .	34
<b>News Scope</b>	
LNG Projects Making Progress . . . . .	41
Large-size Loading Arm for LNG . . . . .	42
Feasibility Study for Kuwait Synthetic Rubber Industry . . . . .	42
Reduction of Phosphate Rock FOB Prices . . . . .	43
Start-up of the New Porto Refinery . . . . .	43
Multi-role Telemetry Equipment Offers Japan New Solution to Problems of Remote Con- trol and Supervision . . . . .	44
Sino-Japanese Technological Tie Concerning Gas . . .	44
Urethan Demand in 1984 . . . . .	44
<b>Business World</b>	
Nuclear Energy . . . 45 / Ocean Development & Petroleum . . . 45 / Chemical Industries . . . 46 / Plant Engineering . . . 49 / Steel & Other Metals . . . 50	
<b>Index to Advertisers</b> . . . . .	48

### December 1975 Vol. 7 No. 12 (No. 91)

<b>Application of Nuclear Energy to Steelmaking Process</b> by Keiji Shimokawa . . .	7
<b>Development of High-temperature Ceramic Filter and Element for Low-level Radioactive Waste Incineration Plant</b> by Kinji Agata and Yoichi Karita . . .	11
<b>The Role of the Consulting Engineer in Projects</b> by H.C. Frijlink . . .	18
<b>The Role of Consulting Engineers in Developing Countries</b> by Sir Robert L. Fitt . . .	21
<b>The Role of Governments in the Export of Consulting Services</b> by B.O.M. Olson . . .	24
<b>Characteristics and Applications of Sponge Metal</b> by Eiji Kamijo and Masaaki Honda . . .	26
<b>Present and Future of Explosive Cladding</b> by Akira Kubota . . .	31
<b>Company Profile</b>	
Hitachi Zosen Technology Oriented To Industrial Structural Changes . . . . .	36
Sumitomo Heavy Industries to Cope with the Structural Change of World Economy . . . . .	40
<b>News Scope</b>	
Status of Nuclear Power Development . . . . .	42
Export of Uranium Smelting Process . . . . .	43
Linde-Engineering for the Arabian Petrochemi- cal Industry . . . . .	43
Advanced Techniques in the Development of Larger-size and High-quality Heavy Structural Steels for Nuclear Power Plants . . . . .	43
Desalination Plants for Abu Dhabi . . . . .	44
Arabian Project for N Power Generation and Water Production . . . . .	44
<b>Business World</b>	
Nuclear Energy . . . 45 / Ocean Development & Petroleum . . . 45 / Chemical Industries . . . 46 / Plant Engineering . . . 49 / Steel & Other Metals . . . 49	
<b>Chemical Economy &amp; Engineering Review</b> —January 1975—December 1975— . . . . .	50
<b>Index to Advertisers</b> . . . . .	48



